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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,924	02/16/2001	Tsutomu Gamo	7217/63753	4281

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EXAMINER

CAO, DIEM K

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application 09/784,924	Applicant(s) GAMO, TSUTOMU	
	Examiner Diem K Cao	Art Unit 2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-12 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-12 and 15-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office action is in response to the Amendment filed on 2/23/2004.
2. Claim 1-2, 5-12 and 15-21 remain in the application. Applicant has amended claims 1, 2, 8, 11-12, 18 and 21 and cancelled claims 3-4 and 13-14.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5-7, 9, 11-12, 15-17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAffer (Meta-level Programming with CodA) in view of Aditham et al. (U.S. 6,378,001 B1).

5. **As to claim 1**, McAffer teaches a complex object constituted of a plurality of objects (set of meta objects, Send, Accept, Queue, Receive, Protocol, Execution and State; page 193, section 2.2) having execution seriality (The Send then transfers ... executing the found method; page 195, last paragraph) and an independent object external to the complex object (object B; page 195, eighth paragraph and Fig. 1), temporarily storing one or more messages directed from an object within the complex object to the independent object external to the complex object (The Send then transfers M to B's Accept which queues it with the Queue; page 195, last paragraph),

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sending the one or more stored messages to the independent object in a single operation (invokes the Receive and fetches the next message from the Queue ...the message is processed by executing the found method; page 195, last paragraph) when the complex object and the independent object enter a predetermined relationship (B will execute a receive operation; page 195, last paragraph).

6. However, McAffer does not teach creating a history of message communications of the objects within the complex object, and determining that the complex object and the independent object have entered a predetermined relationship on the basis of the history of message communications. Aditham teaches creating a history of message communications of the objects within the complex object (The session management services ... a history log of the session; col. 10, lines 60-67), and determining that the complex object and the independent object have entered a predetermined relationship on the basis of the history of message communications (The registered interest for each program ... which want to receive messages of the message 20 type; col. 9, lines 3-13 and application programs use ... they are interested in receiving; col. 10, lines 1-24).

7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of McAffer and Aditham because it would improve the performance of the McAffer' system by forwarding the messages to another objects only if they are interested in the messages.

8. **As to claim 2**, McAffer teaches in one embodiment that the complex object is constituted of a plurality of objects supporting a function call which does not cause a context switch (Compound PortedObjects ... manipulate a group of PortedObjects as one; page 104, section 5.2 and Fig. 4).

9. **As to claim 5**, McAffer teaches the step of temporarily storing controls message storing in accordance with a relationship between the complex object and the independent object (Accepts define the receiver side ... interaction between the sender and receiver; page 194, Accept section and Messages which have been accepted but can not yet be processed must be queued; page 194, Queue section).

10. **As to claim 6**, McAffer teaches the step of temporarily storing controls message storing in accordance with a status of the independent object (Messages which have been accepted but cannot yet be processed must be queued; page 194, Queue section).

11. **As to claim 7**, McAffer teaches the step of temporarily storing controls message storing on a destination-by-destination basis when the one or more stored messages are directed from the object within the complex object to a plurality of independent objects external to the complex object (multicasting messages to a known set of receivers; page 202, section Send and A MultiQueue supports ... the arrival port; page 203, section Queue).

12. **As to claim 9**, McAffer teaches the system constituted of a plurality of objects is an

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object-oriented operating system constituted of a plurality of objects (The boom in micro-kernel operating system ... use the OS components as needed; page 192, fifth paragraph), and in one embodiment, the meta objects can be implemented as concurrent objects (page 196-198, section 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching and suggestion of McAffer because they are useful in normal object behavior description and they are relevant to system parallelism (page 197, last paragraph).

13. **As to apparatus and computer product claims 11 and 21**, they correspond to the method claim of claim 1.

14. **As to claim 12**, see rejection of claim 2 above.

15. **As to claims 15-17**, see rejections of claims 5-7 above.

16. **As to claim 19**, see rejection of claim 9 above.

17. Claims 8, 10, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAffer (Meta-level Programming with CodA) in view of Aditham et al. (U.S. 6,378,001 B1) further in view of Tajés-Martínez et al. (A computational model for an object-oriented operating system).

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18. **As to claims 8 and 18**, McAffer does not teach wherein determining whether to store or immediately send the one or more messages in accordance with a relationship between the complex object which sends the one or more messages and the independent object which receives the one or more messages, with respect to a scheduling priority level and an interrupt priority level of respective execution threads thereof. Tajés-Martínez teaches determining whether to store or immediately send the one or more messages in accordance with a relationship between the complex object which sends the one or more messages and the independent object which receives the one or more messages, with respect to a scheduling priority level and an interrupt priority level of respective execution threads thereof (Scheduler meta-object; sections 4.4 and 4.5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of McAffer and Tajés-Martínez because it provides inter-object and intra-object concurrency.

19. **As to claims 10 and 20**, McAffer does not explicitly teach the system constituted of a plurality of objects is one of an application program and a device driver constituted of a plurality of concurrent objects. Tajés-Martínez teaches the system constituted of a plurality of objects is one of an application program (Base level is composed of application-defined of base objects; section 4.3, right column) and a device driver constituted of a plurality of concurrent objects (the meta level still consist of a set of meta-objects that control the way basic-objects are executed; section 4.3, right column and SO4 is intended to be an object-oriented OS; abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine the teaching of McAffer and Tajés-Martínez because it provides important advantages such as each object will be able to manage its own computation and uniformity is maintained.

Response to Arguments

20. Applicant's arguments with respect to claims 1-2, 5-12, and 15-21 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diem K Cao whose telephone number is (703) 305-5220. The examiner can normally be reached on Monday - Thursday, 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:
Commissioner for Patents
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